IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of:

Inventors:	Dirk Muessig and Dr. Max Schaldach
Serial No.:	10/072,698
Filed:	February 8, 2002
For:	ENDOSCOPIC CATHETER
Group Art Unit:	3739
Examiner:	John P. Leubecker

BRIEF ON APPEAL

To: Mail Stop Appeal Brief- Patents
The Honorable Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

This is an appeal under 37 C.F.R. §1.191 to the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office from the final rejection of claims 1-8 and 17-46 in the above-identified patent application. Three (3) copies of applicants' Brief on Appeal are filed herewith, together with the requisite filing fee under 37 C.F.R. §1.17(f).

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. §1.192(c)):

I. Real Party in Interest
II. Related Appeals and Interferences
III. Status of the Claims
IV. Status of Amendments
V. Summary of the Invention
VI. Issues
VII. Grouping of Claims
VIII. Arguments

IX. Appendix of Claims Involved in the Appeal

The final page of this brief bears the practitioner's signature.

I. REAL PARTY IN INTEREST

The real party in interest in the present application is Biotronik Mess-und Therapieger-aete GmbH & Co. Ingenieurbuero Berlin, by assignment from inventors Dirk Muessig and Dr. Max Schaldach. The assignment is recorded in the United States Patent and Trademark Office at Reel 012857, Frame 0251.

II. RELATED APPEALS AND INTERFERENCES

There have been no interferences relating to this pending application, nor have there been any related appeals or litigation.

III. STATUS OF CLAIMS

The status of the claims in this application are:

1. TOTAL NUMBER OF CLAIMS IN APPLICATION

There are 38 pending claims in this application, numbered 1-8 and 17-46.

2. STATUS OF ALL OF THE CLAIMS

A. Claims canceled: 9-16

B. Claims withdrawn from consideration but not canceled: NONE.

C. Claims pending: Claims 1-8 and 17-46.

D. Claims allowed: NONE.

E. Claims rejected: Claims 1-8 and 17-46.

3. CLAIMS ON APPEAL

The claims on appeal are Claims 1-8 and 17-46.

IV. STATUS OF AMENDMENTS

No Amendments have been filed subsequent to the rejection from which this appeal is taken, contained in the Office Action mailed 2 December 2003. A Response after Final Rejection was filed on February 2, 2004 without Amendment.

V. SUMMARY OF THE INVENTION

All citations to the specification refer to the specification filed on February 8, 2002. The present invention relates to an endoscopic catheter, including an illuminating device, an image recording unit, and an image reproduction unit, for insertion into body cavities. (Paragraph 0001, lines 1-3). In particular, the catheter is adapted controllably for insertion into blood vessels. (Paragraph 0004, line 3). Further, the endoscopic catheter is in the form of an electrode line, and includes at least one electrode at its distal end for delivering and/or picking up electrical signals to or from body tissue adjoining the distal end. (Paragraph 0006, lines 1-4). The ability to deliver and/or pick up electrical signals via the distal end allows the catheter to be optically controlled to its target location. (Paragraph 0006, lines 5-6).

The catheter is adapted controllably by means of displacing the distal end. (Paragraph 0010, lines 2-3). Referring to Fig. 1 of the Application, the catheter 10 includes a sheath 12 that encloses a stiffening flexible helical coil 14 that has an interior lumen for receiving control means 16. (Paragraph 0010, lines 3-5). In a preferred embodiment, the control means includes two control wires 18 and 20 that are connected together at their distal end and are displaceable lengthwise relative to each other by way of a hand wheel 22 located near their proximal end. (Paragraph 0010, lines 5-7). In the region of its distal end, the catheter 10 is more flexible than in adjoining regions. (Paragraph 0010, line 8). The distal end of the catheter can be specifically laterally deflected or diverted, as shown in broken line in Fig. 1, by rotation of the hand wheel 22 and thus by longitudinal displacement of the two control wires 18 and 20 relative to each other. (Paragraph 0010, lines 10-12). Between the two control wires 18 and 20 is a substantially torsionally stiff flat band 24. (Paragraph 0011, lines 1-2). The flat band 24 is connected to a handle portion 26, used to rotate the flat band 24 about its longitudinal axis. (Paragraph 0011, lines 4-5). The two control wires 18 and 20 rotate with the flat band 24 in order that the radial direction of a deflection movement of the catheter end by means of the two control wires 18 and 20 can be determined by the handle portion 26 and the flat band 24. (Paragraph 0011, lines 6-9).

The catheter provides means for recording images of the area around the distal end of the catheter. (Paragraph 0014, lines 1-2). With reference to Fig. 3, an illuminating unit 40 is arranged near the proximal end of the catheter, and an illuminating light waveguide 50 extends from the illuminating unit 40 to the distal end of the catheter. (Paragraph 0014, lines 5-8). The illuminating unit 40 is designed to pass electromagnetic radiation at a wavelength of 600 to 650

nanometers to the distal end 52 of the illuminating light waveguide 50, as referenced in Fig. 2, where the electromagnetic radiation passes through an optical lens 54 at the distal end of the catheter 10. (Paragraph 0014, lines 8-14). The lens 54 and the relative position of the distal illumination light waveguide 52 with respect to the focus of the lens 54 are selected so that the infrared light issuing from the illumination light waveguide 50 is distributed uniformly. (Paragraph 0014, lines 14-18). The wavelength of the electromagnetic radiation or the infrared light in the range of between 600 and 650 nanometers is selected such that it is in a range in which blood is substantially transparent. (Paragraph 0014, lines 18-21). Thus, the illuminating radiation can pass through blood that is present in the blood vessels and is only reflected by the walls of the blood vessels. (Paragraph 0014, lines 21-23).

The catheter uses an endoscopic image recording and reproduction unit 60 that includes an image reproduction device 62 that is connected by way of an image light waveguide 64 to the distal end of the catheter 10. (Paragraph 0015, lines 1-3). The image light waveguide 64 terminates at the focus of the lens 54, and is designed so that it can record an image of the area around the distal catheter end, which is projected onto a distal end face 66 of the image light waveguide 64, and can reproduce the image at its proximal end. (Paragraph 0015, lines 4-7). The proximal end of the image light waveguide 64 is connected to the image reproduction unit 62. (Paragraph 0015, lines 7-9). The image reproduction unit 62 includes a CCD-chip, onto which is projected an image of the area around the distal catheter end that is transmitted optically to the proximal end of the image light waveguide 64. (Paragraph 0015, lines 9-11). That image is an infrared image in the wavelength range of between 600 and 650 nanometers and is electronically converted into a visible image that is represented on a display screen of the image reproduction unit 62. (Paragraph 0015, lines 11-14). A doctor, when introducing the catheter 10, can continuously observe on the display screen of the image reproduction unit 62 the image that is recorded by the distal catheter tip of the vessel walls between which the tip of the catheter 10 is being guided. (Paragraph 0017, lines 1-4).

Referring to Fig. 1, a stimulation or sensing electrode 30 in the region of the distal end of the catheter 10 can be employed. (Paragraph 0012, line 2). The electrode is electrically connected by way of an electric line 32 to the proximal end of the catheter 10. (Paragraph 0012, lines 3-4). Instead of one electrode 30, it is possible to provide a plurality of electrodes and a corresponding plurality of electric lines. (Paragraph 0012, lines 4-6). In an alternate configura-

tion, the catheter 10 can be a balloon catheter that at its distal end carries an expandable balloon that is suitably adapted for enlarging vessels or inserting stents into constricted blood vessels. (Paragraph 0013).

VI. ISSUES

1. Whether the Examiner erred in determining that Claims 1, 6, 18, 22, 26, 30, 34, 38 and 42 are not patentable under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,178,346 to Amundson in view of U.S. Patent No. 5,643,197 to Brucker.

2. Whether the Examiner erred in determining that Claims 1, 6, 18, 22, 26, 30, 34, 38 and 42 are not patentable under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,309,345 to Stelzer in view of U.S. Patent No. 5,643,197 to Brucker.

3. Whether the Examiner erred in determining that Claims 2, 3, 7, 8, 15, 16, 19, 20, 23, 24, 27, 28, 31, 32, 35, 36, 39, 40, 43 and 44 are not patentable under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,309,345 to Stelzer in view of U.S. Patent No. 5,643,197 to Brucker and U.S. Patent No. 6,079,414 to Roth (which incorporates Fantone, U.S. Patent No. 4,786,155 by reference).

Note that claims 15 and 16 were previously cancelled.

4. Whether the Examiner erred in determining that Claims 4, 5, 9, 17, 21, 25, 29, 33, 37, 41 and 45 are not patentable under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,309,345 to Stelzer in view of U.S. Patent No. 5,643,197 to Brucker, U.S. Patent No. 6,079,414 to Roth, and U.S. Patent No. 4,782,819 to Adair.

Note that claim 9 was previously cancelled.

VII. GROUPING OF CLAIMS

The claims under appeal include independent claim 1 and dependent claims 2 through 8, and 17 through 46. The claims will rise or fall together.

VIII. ARGUMENTS

The Statutory standard for the ultimate determination of obviousness provides that a claimed invention is unpatentable if the differences between it and the prior art are such that the

subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art . 35 U.S.C. § 103 (1994); *Graham v. John Deere* 383 US 1, 13.

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The mere fact that references **can** be combined or modified does **not** render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis added). "There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet,* 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998). The showing of a motivation to combine or modify prior art must be clear and particular, and broad conclusory statements about the teachings of one or more references, standing alone, are not "evidence." *In re Dembiczak*, 175 F.3d 994, 1000, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999).

Second, there must be a reasonable expectation of success. Whether an art is predictable or whether the proposed modification or combination of the prior art has a reasonable expectation of success is determined at the time the invention was made. *Ex parte Erlich*, 3 U.S.P.Q.2d 1011 (Bd. Pat. App. & Inter. 1986).

Finally, the prior art reference (or references when combined) must teach or suggest **all** the claim limitations. "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (COCA 1970). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

In the final rejection mailed December 2, 2003, claims 1, 6, 18, 22, 26, 30, 34, 38 and 42 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Amundson et al. in view of Brucker et al.

The Examiner cited Amundson for showing the catheter substantially as claimed, including an endoscopic catheter 25, 43 adapted for insertion into body cavities, comprising: a distal catheter portion (FIG. 12B); an illumination device 71 for illuminating an area around the distal catheter portion with electromagnetic radiation; an image recording unit 63 for recording an image of the electromagnetic radiation reflected by the area around the distal catheter portion and pass it to a proximal end of the catheter; an image reproduction unit 38, connected to the proximal end of the catheter and adapted to reproduce an image of the recorded electromagnetic radiation, wherein the catheter is adapted controllably for insertion into blood vessels, in particular blood vessels (see first-third embodiments), and for reproducing the electromagnetic radiation image reflected by the area around the distal catheter portion with a wavelength for which blood has a high transparency (see the Summary of the Invention). Amundson fails to show an electrode adapted for one of delivering/receiving an electrical signal.

Brucker was cited for showing an analogous endoscopic (col. 9, line 66, through col. 10, line 6) catheter 20 adapted for insertion into body cavities comprising: a distal catheter portion 26, adapted controllably for insertion into blood vessels, wherein the catheter is in the form of an electrode line, with an electrode on the distal catheter portion 26, the electrode being adapted for at least one of delivering an electrical signal to body tissue adjoining the distal catheter portion and receiving an electrical signal to body tissue adjoining the distal catheter portion (col. 3, lines 25-51; note monitoring means).

The Examiner concluded that inasmuch as Amundson teaches the use of their endoscopic catheter in electrical mapping (col. 3, line 46-53), it would have been obvious to the artisan to modify Amundson by adding an electrode to the distal catheter portion as taught by Brucker, since Brucker teaches that such catheter would be capable of studies contemplated by Amundson.

Amundson, col. 3, lines 46-53, states "With the interest in electrical mapping and catheter ablation, cardiologists specializing in these procedures, called electrophysiologists, have searched for visualization techniques to assist them in these procedures. In these procedures, catheters are inserted to precise positions within the heart. Any visualization of these procedures

would be extremely valuable." Here, Amundson is referring to the problems with positioning existing catheters in blood filled cavities, such as blood vessels or a heart, when used with existing imaging endoscopes. As such, the imaging endoscope and the catheter are *separate* instruments that are simultaneously inserted in the blood vessel. Such a *separate* catheter is a catheter as disclosed in Brucker.

Amundson discusses in several places, the need for improved blood endoscopes that are capable of visualization in blood for use with *existing separate* catheters, see col. 9, line 1 through col. 10, line 16. At col. 8, lines 35-37, Amundson teaches the use of Amundson's imaging endoscope for guiding cardiac catheters navigating blood vessels. At col. 33, lines 12-22, Amundson discusses using Amundson's infrared endoscope to guide the placement of a separate electrode catheter. Further, at col. 35, lines 6-11, Amundson discloses that Amundson's infrared endoscope is used with *separate* electrophysiogic and ablation catheters.

Absent the teaching of Applicants' disclosure, Amundson does not suggest or motivate one skilled in the art to combine the imaging endoscope teachings of Amundson with the catheter electrode teachings of Brucker. The teachings of Amundson cited by the Examiner refer to the use of *separate* instruments, an imaging endoscope and a catheter, and would not motivate one skilled in the art to take an electrode, such as Brucker's, and position it on an imaging endoscope, as claimed in claim 1.

Further, the Examiner has made only broad conclusory statements about the motivation in Amundson and Brucker to combine or modify the prior art. The showing of a motivation to combine or modify prior art must be clear and particular, and broad conclusory statements about the teachings of one or more references, standing alone, are not "evidence." *In re Dembiczak*, 175 F.3d 994, 1000, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). It is improper to use the inventor's patent application as an instruction book on how to reconstruct the prior art. *Panduit v. Dennison*, 1 U.S.P.Q.2d 1593 (Fed. Cir. 1987). Further, the reasons one of ordinary skill in the art would have been motivated to select the references and combine them must be specifically identified. (See *In re Fritch*, 23 U.S.P.Q.2d 1780). Applicants submit that the Examiner has not established a *prima facie* case of obviousness and that the claims are allowable over Amundson and Brucker.

In the final rejection mailed December 2, 2003, claim 1, 6, 18, 22, 26, 30, 34, 38 and 42 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Stelzer et al. in view of Brucker et al.

The Examiner cited Stelzer for showing the catheter substantially as claimed, including, an endoscopic catheter 505 adapted for insertion into body cavities, comprising: a distal catheter portion (FIG. 14); an illumination device 3, 4 for illuminating an area around the distal catheter portion and pass it to a proximal end of the catheter (along lines 52); an image reproduction unit (heads-up display, see col. 6, lines 33-38), connected to the proximal end of the catheter and adapted to reproduce an image of the recorded electromagnetic radiation, wherein the catheter is adapted controllably for insertion into blood vessels 701, in particular blood vessels, and for reproducing the electromagnetic radiation image reflected by the area around the distal catheter portion, with a wavelength for which blood has a high transparency (col. 6, lines 58-61). Stelzer fails to show an electrode adapted for one of delivering/receiving an electrical signal.

Brucker was cited for showing an analogous endoscopic (col. 9, line 66, through col. 10, line 6) catheter 20 adapted for insertion into body cavities comprising: a distal catheter portion 26, adapted controllably for insertion into blood vessels, wherein the catheter is in the form of an electrode line, with an electrode on the distal catheter portion 26, the electrode being adapted for at least one of delivering an electrical signal to body tissue adjoining the distal catheter portion and receiving an electrical signal to body tissue adjoining the distal catheter portion (col. 3, lines 25-51; note monitoring means).

The Examiner concluded that inasmuch Stelzer teaches the use of their endoscopic catheter in cauterization (col. 3, line 46-63), it would have been obvious to the artisan to modify Stelzer by adding an electrode to the distal catheter portion as taught by Brucker since Brucker teaches that such would add the capability for measuring in biological tissue and suggests that such would be useful in analogous ablation procedures.

Ablation or cauterization of Stelzer is not the same as an "electrode being adapted for at least one of: delivering an electrical signal to body tissue adjoining the distal catheter portion and receiving an electrical signal to body tissue adjoining the distal catheter portion" as claimed in claim 1. Ablation or cauterization are used to burn or remove tissue, and are not used to deliver or receive electrical signals to/from the body tissue. The presence of such an electrode on an optical catheter makes the catheter useful as a mapping catheter for investigating the heart.

Absent the teaching of Applicants' disclosure, Stelzer does not suggest or motivate one skilled in the art to combine the imaging endoscope teachings of Stelzer with the catheter electrode teachings of Brucker. The teachings of Stelzer cited by the Examiner refer to the use of separate instruments, an imaging endoscope and a catheter, and would not motivate one skilled in the art to take an electrode, such as Brucker's, and position it on an imaging endoscope, as claimed in claim 1.

Further, the Examiner has made only broad conclusory statements about the motivation in Stelzer and Brucker to combine or modify the prior art. The showing of a motivation to combine or modify prior art must be clear and particular, and broad conclusory statements about the teachings of one or more references, standing alone, are not "evidence." *In re Dembiczak*, 175 F.3d 994, 1000, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). It is improper to use the inventor's patent application as an instruction book on how to reconstruct the prior art. *Panduit v. Dennison*, 1 U.S.P.Q.2d 1593 (Fed. Cir. 1987). Further, the reasons one of ordinary skill in the art would have been motivated to select the references and combine them must be specifically identified. (See *In re Fritch*, 23 U.S.P.Q.2d 1780). Applicants submit that the Examiner has not established a *prima facie* case of obviousness and that the claims are allowable over Stelzer and Brucker.

In the final rejection mailed December 2, 2003, claims 2, 3, 7, 8, 15, 16, 19, 20, 23, 24, 27, 28, 31, 32, 35, 36, 39, 40, 43 and 44 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Stelzer et al. in view of Brucker et al. as applied to claims 1, 6, 18, 22, 26, 30, 34, 38 and 42, further in view of Roth et al., which incorporates Fantone et al. by reference.

Claims 2, 3, 7, 8, 15, 16, 19, 20, 23, 24, 27, 28, 31, 32, 35, 36, 39, 40, 43 and 44 depend from independent claim 1. These claims are patentable over the combination of Stelzer, Brucker and Roth for the same reasons discussed above for claim 1.

In the final rejection mailed December 2, 2003, claims 4, 5, 9, 17, 21, 25, 29, 33, 37, 41 and 45 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Stelzer et al. in view of Brucker et al. and Roth et al., which incorporates Fantone et al. by reference., as applied to claims 2, 3, 7, 8, 15, 16, 19, 20, 23, 24, 27, 28, 31, 32, 35, 36, 39, 40, 43 and 44. further in view of Adair et al.

Claims 4, 5, 9, 17, 21, 25, 29, 33, 37, 41 and 45 depend from independent claim 1. These claims are patentable over the combination of Stelzer, Brucker, Roth and Adair for the same reasons discussed above for claim 1.

Conclusion

Applicant's submit that the Examiner has not established a *prima facie* case of obviousness in view of either Amundson and Brucker or Stelzer and Brucker. Further, absent the teaching of Applicants' disclosure, neither the combination of Amundson and Brucker nor the combination of Stelzer and Brucker suggest or motivate one skilled in the art to combine imaging endoscope teachings of Amundson or Stelzer with the catheter electrode teachings of Brucker.

Applicant's respectfully request that the rejection of the claims as being obvious in view Amundson and Brucker and also, Stelzer and Brucker, be reversed and this application be passed to allowance.

Respectfully submitted,
HAHN LOESER & PARKS LLP

1225 West Market Street
Akron, Ohio 44313
330.864.5550 (voice)
330.864.7986 (fax)

Michael H. Minns
Reg. No. 31,985

mhminns@hahnlaw.com

APPENDIX

IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

1. (Previously Presented) An endoscopic catheter adapted for insertion into body cavities, comprising:

a distal catheter portion;

an illumination device for illuminating an area around the distal catheter portion with electromagnetic radiation;

an image recording unit for recording an image of the electromagnetic radiation reflected by the area around the distal catheter portion and pass it to a proximal end of the catheter;

an image reproduction unit, connected to the proximal end of the catheter and adapted to reproduce an image of the recorded electromagnetic radiation,

wherein the catheter is adapted controllably for insertion into blood vessels, in particular blood vessels, and for reproducing the electromagnetic radiation image reflected by the area around the distal catheter portion, with a wavelength for which blood has a high transparency, and

wherein the catheter is in the form of an electrode line, with an electrode on the distal catheter portion, the electrode being adapted for at least one of: delivering an electrical signal to body tissue adjoining the distal catheter portion and receiving an electrical signal to body tissue adjoining the distal catheter portion.

2. (original) The catheter of claim 1, wherein the catheter reproduces an image recorded in a wavelength range of between 600 and 650 nanometers.

3. (original) The catheter of claim 2, wherein the illumination device illuminates the area around the distal catheter portion with infra-red light of a wavelength of between 600 and 650 nanometers.

4. (original) The catheter of claim 3, wherein the illumination device further comprises an optical band pass filter for a frequency band of between 600 and 650 nanometers.

5. (original) The catheter of claim 4, wherein the illumination device further comprises an illumination light waveguide from the proximal to a distal catheter end, to pass electromagnetic radiation serving for illumination purposes from the proximal catheter end to the distal catheter end.

6. (original) The catheter of claim 1, wherein the illumination device further comprises an illumination light waveguide from the proximal to a distal catheter end, to pass electromagnetic radiation serving for illumination purposes from the proximal catheter end to the distal catheter end.

7. (original) The catheter of claim 2, wherein the illumination device further comprises an illumination light waveguide from the proximal to a distal catheter end, to pass electromagnetic radiation serving for illumination purposes from the proximal catheter end to the distal catheter end.

8. (original) The catheter of claim 3, wherein the illumination device further comprises an illumination light waveguide from the proximal to a distal catheter end, to pass electromagnetic radiation serving for illumination purposes from the proximal catheter end to the distal catheter end.

Claims 9-16 (cancelled)

17. (previously presented)The catheter of claim 5, wherein the catheter carries an expandable balloon at its distal catheter portion.

18. (original) The catheter of claim 1, wherein the catheter carries an expandable balloon at its distal catheter portion.

19. (original) The catheter of claim 2, wherein the catheter carries an expandable balloon at its distal catheter portion.

20. (original) The catheter of claim 3, wherein the catheter carries an expandable balloon at its distal catheter portion.

21. (original) The catheter of claim 4, wherein the catheter carries an expandable balloon at its distal catheter portion.

22. (previously presented)The catheter of claim 6, wherein the catheter carries an expandable balloon at its distal catheter portion.

23. (previously presented)The catheter of claim 7, wherein the catheter carries an expandable balloon at its distal catheter portion.

24. (previously presented)The catheter of claim 8, wherein the catheter carries an expandable balloon at its distal catheter portion.

25. (original) The catheter of claim 17, wherein the expandable balloon is suitably adapted for dilation of constricted blood vessels.

26. (original) The catheter of claim 18, wherein the expandable balloon is suitably adapted for dilation of constricted blood vessels.

27. (original) The catheter of claim 19, wherein the expandable balloon is suitably adapted for dilation of constricted blood vessels.

28. (original) The catheter of claim 20, wherein the expandable balloon is suitably adapted for dilation of constricted blood vessels.

29. (original) The catheter of claim 21, wherein the expandable balloon is suitably adapted for dilation of constricted blood vessels.

30. (original) The catheter of claim 22, wherein the expandable balloon is suitably adapted for dilation of constricted blood vessels.

31. (original) The catheter of claim 23, wherein the expandable balloon is suitably adapted for dilation of constricted blood vessels.

32. (original) The catheter of claim 24, wherein the expandable balloon is suitably adapted for dilation of constricted blood vessels.

33. (original) The catheter of claim 25, wherein the balloon is suitably adapted for inserting and expanding stents.

34. (original) The catheter of claim 26, wherein the balloon is suitably adapted for inserting and expanding stents.

35. (original) The catheter of claim 27, wherein the balloon is suitably adapted for inserting and expanding stents.

36. (original) The catheter of claim 28, wherein the balloon is suitably adapted for inserting and expanding stents.

37. (original) The catheter of claim 29, wherein the balloon is suitably adapted for inserting and expanding stents.

38. (original) The catheter of claim 30, wherein the balloon is suitably adapted for inserting and expanding stents.

39. (original) The catheter of claim 31, wherein the balloon is suitably adapted for inserting and expanding stents.

40. (original) The catheter of claim 32, wherein the balloon is suitably adapted for inserting and expanding stents.

41. (original) The catheter of claim 33, wherein the catheter further comprises means for controlling a targeted deflection of the distal end of the catheter, actuable from the proximal end thereof.

42. (original) The catheter of claim 1, wherein the catheter further comprises means for controlling a targeted deflection of the distal end of the catheter, actuable from the proximal end thereof.

43. (original) The catheter of claim 2, wherein the catheter further comprises means for controlling a targeted deflection of the distal end of the catheter, actuable from the proximal end thereof.

44. (original) The catheter of claim 3, wherein the catheter further comprises means for controlling a targeted deflection of the distal end of the catheter, actuable from the proximal end thereof.

45. (original) The catheter of claim 4, wherein the catheter further comprises means for controlling a targeted deflection of the distal end of the catheter, actuable from the proximal end thereof.

46. (original) The catheter of claim 5, wherein the catheter further comprises means for controlling a targeted deflection of the distal end of the catheter, actuable from the proximal end thereof.